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Human Resource Information System with Digital Archiving

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Abstract

This study aimed to develop an automated tool for Human Resource Information System (HRIS) with security code and verifier integrated module. Rapid Application Development (RAD) Model was used in the planning, creating, deploying, and testing the system. VisualBasic.net, Navicat, and Dezign were utilized in the system development and MySQL as database. The system helps manages employees' records, in particular, information for leave credits, service records, and training development programs. It also tracks employees' performance and skills and manage the office resources. Using the system evaluation based on the ISO 9126 standard, the system has a high rate of usability (4.27), functionality (4.35), maintainability (4.23), and efficiency (4.30). Thus, the system is believed to provide a significant contribution to the productivity of the Human Resource employees; thereby, generating a due and timely feedback to the administration.

Keywords: HRIS; Digital Archiving; RAD Model.

1. Introduction

Human Resource Information System (HRIS) plays a strategic role in decision making as a process for effective and efficient Human Resource Management [1]. The Surigao State College of Technology-Del Carmen Campus is the lone public higher-education institution in Siargao Island, Surigao del Norte. It has a Human Resource Office which aimed to maximize the productivity of the campus by optimizing the effectiveness of its employees and transactions. However, the office lacks appropriate tool to systematize office businesses, specifically, on managing employees' basic information. Thus, this project came to birth which aimed to develop a Human Resource Information System (HRIS), centralizing employees' records and maintaining electronic personnel files.

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In the past, most of the organizations invested and spent large amounts of money and reserved on HR software; unfortunately, many of these were utilized only for Human Resource administrative purposes rather than for effective and efficient human resource planning [1]. Many innovations have developed including the invention, thus, relate to a method for archiving user data in a database of an online server, where the data can be accessed at any time from an electronic apparatus having an internet access [2]. Traditionally, record management required vast amounts of documents to be shipped to storage facilities only to necessitate retrieval when needed and was resulted to unnecessary expense of both time and money [3]. On the other hand, through the selection and application of appropriate policies, standards, and procedures, overall information security program helps the organization meets its business objectives [4]. It is evident from the cited studies that the use of traditional-manual processes might lead to consuming time, money, and difficulty to access and recover documents. Also, previous studies stressed that effective and efficient human resource planning is indeed important in any organization. SSCT- Del Carmen Human Resource office has no available database yet to perform transactions in a systematic and convenient way. In so far, no existing system duly integrated with digital archiving the Human Resource Office of the campus has ever had. Obviously, the main challenges face by SSCT Human Resource Office at present emanate from fragmented massive paper-based records accumulated over many years. Hence, SSCT Del Carmen looked forward to optimize the way of doing their services. It is then desired that a better way of improving the present set up of the HR office's transactions of SSCT Del Carmen must be in place. Thus, this study is deemed to address the present problem in the HR Office which is designed to manage employees' records, particularly, in facilitating information for leave credits, service records, training development and assessment.

2. Objectives

The study generally aimed to develop Human Resource Information System with Digitial Archiving in the registration, storing, and monitoring of employees' information. Specifically, it aims to:

1. Design a system called Human Resource Information System (HRIS) which will consist of:

   1.1 User Account Modules

   1.2 Admin Account Modules

2. Implement the HRIS in SSCT with the integrated security code generator and support of code verifier;
3. Evaluate the HRIS using the system evaluation tool parallel to the ISO 9126 Standards as to usability, functionality, maintainability, and efficiency.

3. Conceptual Framework

The study was anchored from [5] for they concluded that HRIS played a major role in the management of human resources. Organizations should integrate HRIS with other organizational systems to facilitate speedily sharing of information and decision making. Also, under [6] it clearly stated in Article 1 that, the state shall pursue, conserve and promote the Filipino cultural heritage and resources including the documentary records of

Filipino culture, history and governance. The researcher decided to affix the system combination of human resource and digital archiving. The combination will help the organization easily manage and monitor the information and archived files or documents of the employee. The figure 1.0 below shows the Input-Process-Output (IPO) Model used in conceptualizing the development of the system. The IPO Model involves the stages of Input, Process and Output with its variables. Evaluation was also included after the said model is done.

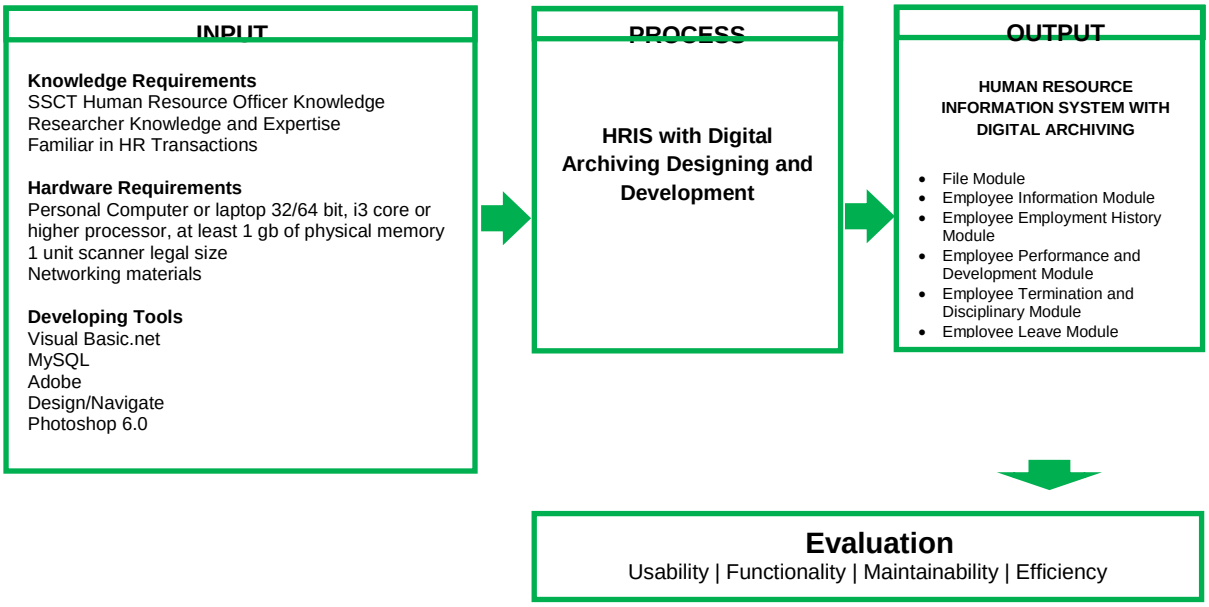

Figure 1: IPO Model

To create a succesful Human Resource Information System, knowledge, hardware and software are needed on the input stage in IPO Model. The development of the system requires the knowledge of human resource officer, the researcher's technical knowledge, harwdware and software and expertise and the familiarization on the human resource transactions for the better understanding on the need of the office. On the process stage, in second box, the designing and development of the system is being done. The System Development Life Cycle (SDLC) includes sytem conceptualization, planning, analysing, designing, development and integration with other components are considered.The system deliverables can be seen in third box. The various modules are some of the outputs in the system development. Lastly, the evaluation of the system is being done to ensure the conformity to the standards as to usability, functionality, maintainability and efficiency.

4. Methodology

The Rapid Application Development (RAD) methodology of System Development Life Cycle was used in the study. Figure 2 shows the flow of the implementation of the system. The system ensures to increase reusability of components and encourage the customer feedback as considered for evaluation. The study was conducted in Surigao State College of Technology- Del Carmen Campus at Del Carmen, Surigao del Norte. It is located in one of the oldest places in the cluster islands known as Siargao of Pacific Ocean and eastern part of Surigao del Norte. Also, the study was mainly focused on the development of HRIS with Digital Archiving and deployed on the same institution.

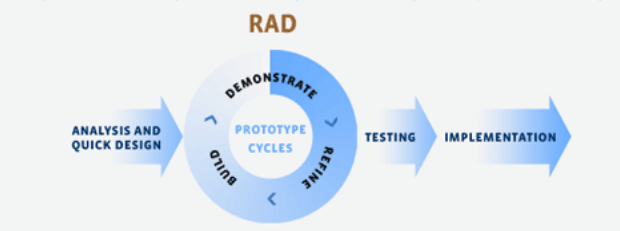

Figure 2: RAD Model

System Analysis

The researcher analyzed the legitimate information acquired from the HR Office. Data were collected through interview to understand the system procedures in the operations. In addition, documenting current operations within a short span of time was considered to describe the format and functions of the present system. Figure 3 shows the present transaction's procedure in the Human Resource Office. The employee submits necessary documents; the HR Staff manually enters data into a computer and places the submitted documents into a file cabinet. However, when reports are needed, the HR personnel manually scan papers from bulk files which are apparently a tedious process; thereby, resulted to wide consumption of time until reports are generated.

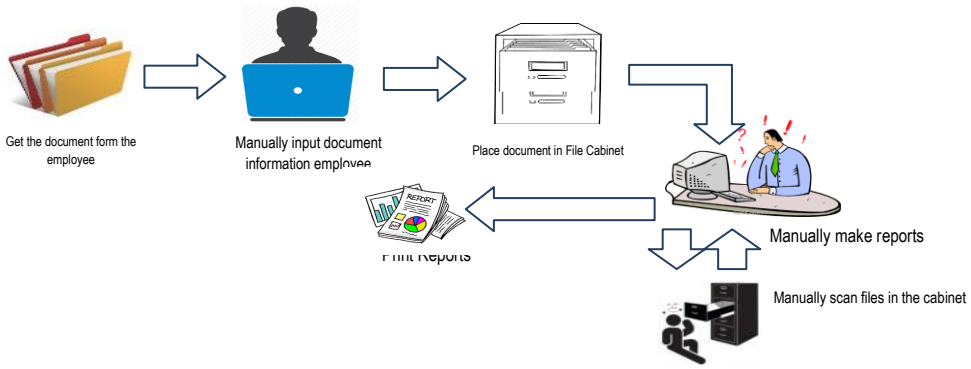

Figure 3: Current Technical Situation

System Design

The designing of the database was done to estimate the effectiveness and efficiency of the application systems. It created a logical data model of the business information that must be stored in, and accessed through the database. Figure 4 shows the system architecture of the study. Firstly, the administrators referred to this section are the Campus Director and the Human Resource Officer. The HRIS provides the administrators with data for performance management, training monitoring, DTR monitoring, Leave Monitoring and employee development. The HRIS will also provide the information necessary to help the administrators to make decisions that will contribute to the achievement of the unit's strategic goals and objectives. Easy access to accurate employees' data enables the administrators to view and manage employees' action, either subject to some disciplinary actions, promotions, or training program enrollment.

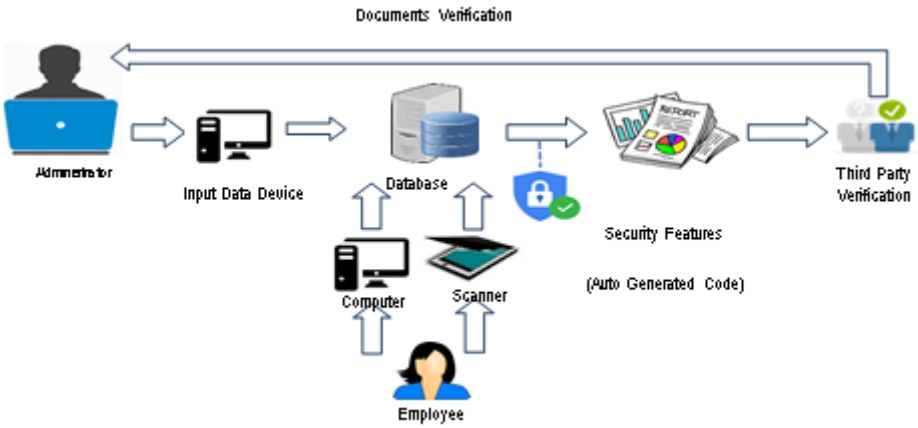

Figure 4: System Architecture

Much like power users, the HR Staff also spend a significant portion of their day interacting with the HRIS. The clerical employee must understand the process required to enter information into the HRIS and may also need to start the process or generate periodic reports. Further, all the employees in the organization may interface with the HRIS through self-service system modules. Self-service capabilities encourage employees to manage their personal HR profiles with respect to a variety of functions, such as personal information, employment history, employee development training attendance, in addition to using HRIS-based systems to complete numerous personnel forms. Employees will log on to the system, they will be restricted to access other employees accounts; however, they can access to view their respective service records, daily time record and leave credits ledger. The input data will be done through the use of input devices such as computer and scanner. All data will be saved into database. Documents to be released have embedded security features auto-generating codes to ensure the authenticity of all documents printed. The output is a report that includes Updated Employee Profile, Leave Credits, Service Record, Scanned documents under 201 File .Lastly, the third party will be asking for documents of employees to verify the authenticity of entries through visiting the concerned institution and to provide the security generated code for verification.

System Development

The system development involves the cyclical process of building, refining, and demonstrating the said innovation. The hardware and software devices used are specified clearly. Throughout the system development, computer unit with the specifications of at least 1GB RA M, Hard Disk Drive of 500 GB was used. Similarly, software applications used in the study were VB.net programming language for the development of the system, Dezign for database designing and Navicat for database file management. MySQL was used as database to ensure an effective delivery of reliable, high-performance and scalable data processes embedded in the Human Resource Information System.

5. Evaluation Methods and Tools

The study used the descriptive research design and survey method was utilized. The data needed for system

evaluation were gathered through an adopted intrument. The content was adopted from John Brooke (1986) and ISO 9126 [9]. The instrument consisted of two parts. Part I covered the items on the personal information of the employee. Part II focused on the items that would determine the usability, functionality, maintanability and efficiency of the system. To ensure that the instrument truly fits the objectives of the study, the proponent underwent the processess of establishing its validity.

Table 1: Distribution of Respondents

RESPONDENTS	N	PERCENTAGE
Campus Human Resource Officer & staff	3	10 %
Campus Director, Program Heads	7	23.33 %
Faculty & staff	20	66.67 %
Total	30	100 %

Table 1 shows the total number of respondents. Thirty (30) persons evaluated the system; to wit, three (3) from the office of Campus Human Resource; seven (7) from the group of Campus Director and Program Heads; and twenty (20) selected members of the Faculty and staff. To statistically treat the obtained evaluation results, frequency counts, mean and percentages were utilized using the MINITAB. Then, the data were analyzed and interpreted. The interpretations used to qualitatively interpret weighted means obtained from the user's ratings are as follows: "Strongly Agree" (5) for average values of 4.2 – 5.0; "Agree" (4) for average values of 3.4- 4.1; "Fair" (3) for weighted means of 2.6-3.3; "Disagree" (2) for 1.8–2.5 and "Strongly Disagree" (2) for 1.0–1.7.

6. Results and Discussion

The implementation of HRIS then was believed to affect increase in HR personnel job satisfaction and turnover intention and influence the occupational identity of HR personnel [7]. This section shows the result of the study and presents the attainment on the specified objectives of the study. Figure 5 shows the log-in form. An employee will enter his/her username and password to access the main form.

Figure 5: Admin Log-in Form

Figure 6 shows the main form. It shows the vision and mission of the college and the system brief description.

Figure 7 shows the Admin Management form. The form shows the list of employees with their username and password. The form is intended for the management of user accounts which will be used by the employees on their own account.

Figure 6: Admin Main Form

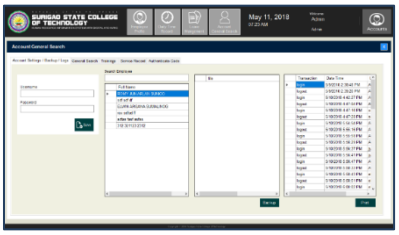

Figure 7: Admin Management Form

Figure 8 shows the Admin Personal Information Form. The form shows the employee list, employee's personal information, and various clickable modules. The administrator can also use the buttons to add an employee, modify information and print personal data sheet. Information is displayed from the entered data on respective employee's portal. Date, day and time are displayed as well on the form. The name of the administrator is displayed and the search box is provided.

Figure 8: Admin Personal Information Form

Figure 9 shows the employee personal information form. It displays his/her basic information. If the employee wants to change the information, he/she can click the *modify information button*.

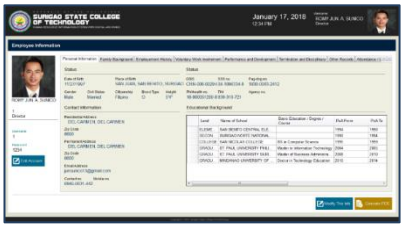

Figure 9: Employee Personal Information Form

Figure 10 shows the employee personal information modification form. It shows the basic information of the

employee to add and update its data.

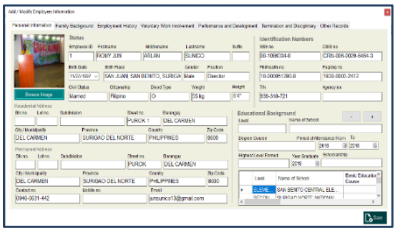

Figure 10: Employee Personal Information Modification Form

Figure 11 shows the Code Verification Form (Non-Authentic). Admin/Users will enter the code into the code verification portal. The figure below shows the Non-authentic documents and displays "DOCUMENT IS NOT AUTHENTIC".

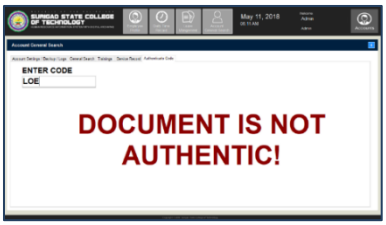

Figure 11: Code Verification Form (Non-authentic)

Figure 12 shows the Code Verification Form (Authentic). Admin/Users will enter the code into the code verification portal. The figure below shows the authentic documents and displays "DOCUMENT IS AUTHENTIC".

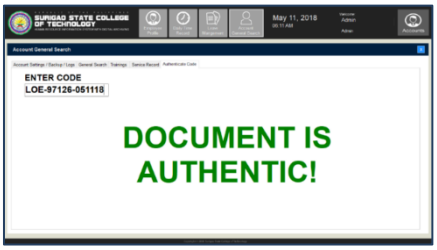

Figure 12: Code Verification Form (Non-authentic)

Figure 13 shows the List of Employee Report. It shows on the figure below the list of employee and the generated code.

Figure 14 shows the Database Encryption. The figure below shows the encryption of data in database as one of the security features of the system.

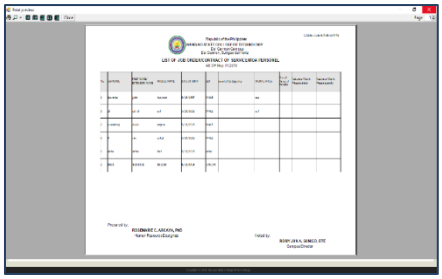

Figure 13: List of Employee Report

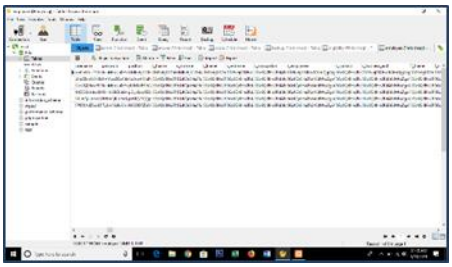

Figure 14: Database Encryption

7. Evaluation of the System

The system was deployed and evaluated using the regulatory standards set by the International Standard Association (ISO). In particular, it employed the ISO 9216 assessing the system's usability, functionality, maintainability and efficiency. Further, Figure 15 presents the usability of the HRIS. Under component 1 when asked if *the system is likely to use frequently*, users rated "Strongly Agree" with a mean score of 4.27; when asked if *the system was easy to use*, a mean score of 4.37 was obtained which also means "Strongly Agree". On *various functions in this system were well integrated*, a mean score of 4.17 was obtained, on *most people would learn to use this system very quickly*, a mean of 4.47. Respondents thought that they are *very confident in using the system* evident from the mean score of 4.07. Generally, the mean of the usability index of the system is 4.27 which means that respondent strongly agree that the system is usable. Moreover, the results revealed that most of the employees were satisfied on the performance on the usefulness of the system. Users have evaluated that the system has friendly environment such as to the point of commands and graphical user interface.

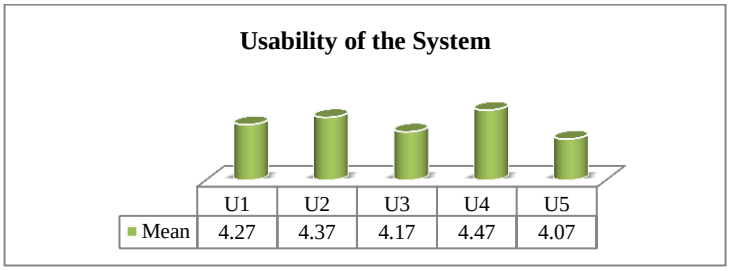

Figure 15: Usability of the System

Buttons and instructions are well detailed which gives satisfaction in a specified context of use. On the other

hand, users rated the system with the lowest mean in the item of the confidence in using the system because other employees were not able yet familiarized the entire process of using the system and its reports Furthermore, Figure 16 shows the extent of functionality as performed by the system. The rates are, that there are essential appropriate functions of the system (F1-4.43); there is a correctness of the functions and commands (F2- 4.47); the system component does not typically function in isolation (4.30); the system has met the institution appropriate laws and guidelines that need to comply with (F4-4.40) and the system has the security relates to unauthorized access to the software functions (F5-4.40). No employee rated "Fair" and "Poor" on this aspect. On functionality aspect, the weighted mean adjectival rating is Strongly Agree" with the rate of 4.35.

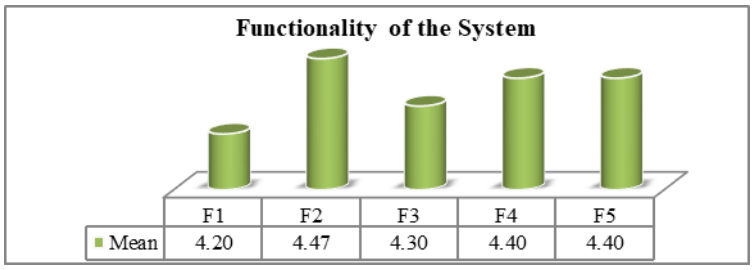

Figure 16: Functionality of the System

Based on the result on the functionality of the system, the employees were satisfied to the functional operation of the system such as to data manipulation, data consistency, accuracy of information processing and other specific functionality as defined on the objective of the study. Figure 17 revealed the weighted mean from the item's score for maintainability and efficiency is 4.23 (Strongly Agree) and 4.35 (Strongly Agree), respectively. M1, M2, and M3 are items for maintainability while F1 and F2 are for functionality. In maintainability, the majority of the employees rated high on "Strongly Agree" such as the system can easily identify the root cause of a failure within the software (M1-4.10) and the system can sustain on updates (M2-4.10).The system can store a system/data changes with the rate of (M3-4.50). On the efficiency of the system, the system has the capability of resources to store huge amount of data (F1-4.20), and the system has the capability of speed to execute the process (F2-4.50).

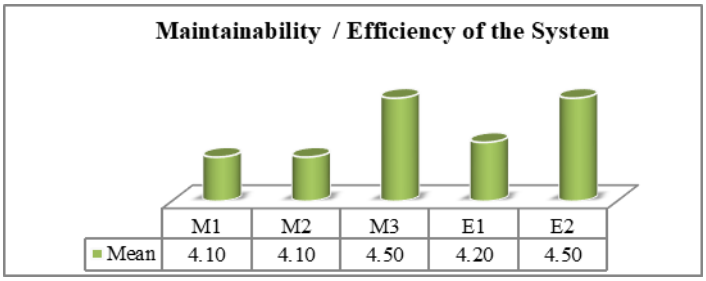

Figure 17: Maintainability and Efficiency of the System

The technical use of terms in maintainability aspects might be the reason of having 4.10 rates considering that not all employees have the knowledge in system technicality. However, having that rate in maintainability is a good indication that users still believe on the system capacity in identifying the root cause of a failure and can

store data changes. In efficiency, the system is to be trusted, that can store a huge amount of data since MySQL is used as a database. The capability of fast speed to execute the process is also observed, definitely, because the schemas are planned well. More so, Table 2 shows the grand mean of the system of 4.29 from the mean of every evaluated characteristics. The grand mean has a verbal description of Strongly Agree.

Table 2: Summary of Table Evaluation

System Evaluation in terms of :	**Mean**	**Verbal Description**
USABILITY	4.27	Strongly Agree
FUNCTIONALITY	4.35	Strongly Agree
MAINTAINABILITY	4.23	Strongly Agree
EFFICIENCY	4.30	Strongly Agree
Grand Mean	**4.29**	**Strongly Agree**

8. Conclusion

The integration of Human Resource Information System is then believed as a very convenient way to acquire, store, manipulate, analyze, retrieve, and distribute institution‘s information relative to human resource management. Its compliance to the ISO 9126 standard and the systematic display of information provides ease in decision-making among top management.

9. Recommendations

The following recommendations were formulated and advanced in answer to the problem issues raised.

1. The level of ICT usage between the employees and administration is significant. For maximum participation of employee, the HR Staff should do the task on monitoring the updates of information as made by the employee. Likely, a compulsory update of their own account is encouraged every month.
2. The offices should have at least one(1) computer unit connected to HR Office where the database is installed. Purchase of switch is also encouraged.
3. Finally, system are already installed in SSCT- Del Carmen, further researches and improvement of the system are needed for its SSCT wide implementation and association with other automated system.

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